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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,705	07/20/2006	Mitsuru Kitamura	U 016399-7	7825

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EXAMINER	
AMARI, ALESSANDRO V	
ART UNIT	PAPER NUMBER
2872	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,705	KITAMURA, MITSURU	
	Examiner	Art Unit	
	ALESSANDRO AMARI	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/20/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Kitamura et al US 2002/0027702.

In regard to claim 17, Kitamura et al teaches (see Figure 11) a computer hologram medium on which an original image is recorded as interference fringes that form a convex and concave structure, wherein a large number of unit areas are defined on the medium, the respective unit areas on the medium are each divided into a first area and a second area, the first area and the second area have a relationship that one forms a convex portion, and the other, a concave portion, interference wave intensity at a position of each unit area is expressed by an occupancy ratio of the first area relative to the unit area, and the respective unit areas are arrayed at a pitch of equal to or less than 400nm as described in paragraphs [0112] – [0116].

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dai Nippon Printing Co. JP 2000-214750 in view of Nippon Telegraph and Telephone Corp. JP2002-72838.

In regard to claim1, Dai Nippon teaches (see Figures 1-14) a method for creating a computer hologram by forming interference fringes on a predetermined recording surface (20) by a computer-aided operation, said method comprises the steps of: defining a predetermined original image, a recording surface for recording the original image, and a reference light (R) to be irradiated onto the recording surface; defining a large number of calculation points (Q(x, y)) on the recording surface, and calculating, in terms of the individual calculation points, intensity of an interference wave formed by an object light (01 to ON) emitted from a light source (P1 to PN) defined on the original image and the reference light (R); defining a plurality of types of binary patterns (DO to D6) each defined by dividing a unit area having a fixed form and size into a first area having a first pixel value and a second area having a second pixel value by changing an occupancy ratio of the first area relative to the unit area as shown in Figure 14; allocating, at positions of the respective calculation points (Q(x, y)), binary patterns (DO to D6) having occupancy ratios corresponding to interference wave intensities in terms of the respective calculation points, respectively; and creating physical fringes on a medium based on a binary image formed from an assembly of the binary patterns (DO to D6) allocated onto the recording surface as described in the entire document.

In regard to claim 9, Dai Nippon teaches (see Figures 1-14) a method for creating a computer hologram by forming interference fringes on a predetermined recording surface by a computer-aided operation, said method comprises the steps of: defining a predetermined original image and a recording surface for recording the original image; defining a large number of calculation points (Q(x, y)) on the recording surface, and calculating, in terms of the individual calculation points, intensity and phase of an interference wave formed by an object light (O1 to ON) emitted from a light source (P1 to PN) defined on the original image; defining a plurality of types of binary patterns (DO to D6) each defined by dividing a unit area having a fixed form and size into a first area having a first pixel value and a second area having a second pixel value by changing an occupancy ratio of the first area relative to the unit area; allocating, at positions of the respective calculation points (Q(x, y)), three-dimensional cells with the two-dimensional binary patterns having occupancy ratios corresponding to interference wave intensities in terms of the respective calculation points, respectively, and three-dimensional structures capable of phase modulations corresponding to interference wave phases in terms of the respective calculation points, respectively; and creating a physical hologram recording medium formed from an assembly of the three-dimensional cells allocated onto the recording surface as described in the entire document.

However, in regard to claims 1, 6, 9 and 14, Dai Nippon does not teach wherein a pitch of the calculation points (Q(x, y)) defined on the recording surface is set equal to or less than a minimum wavelength of a visible light as described in the entire document or 400nm.

In regard to claims 1, 6, 9 and 14, Nippon Telegraph and Telephone teaches a pitch of the calculation points (Q(x, y)) defined on the recording surface is set equal to or less than a minimum wavelength of a visible light or 400nm as described in the entire document.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the sample pitch less than the wavelength of the reproduction light in order as taught by Nippon Telegraph and Telephone to prevent an occurrence of unnecessary reproduction light in the method of Dai Nippon.

Regarding claims 2 and 10, Dai Nippon teaches wherein a rectangle is used as the unit area, and the binary pattern is formed by arranging the first area formed of a rectangle having a vertical width equal to a vertical width of the unit area and having a horizontal width according to a predetermined occupancy ratio at an approximately center position with respect to a horizontal width of the unit area and providing a remaining part as the second area as described in the entire document and as shown in the drawings.

Regarding claims 3 and 11, Dai Nippon teaches wherein physical binary patterns are formed by beam scanning using a drawing apparatus with a predetermined resolution, horizontal width sizes of the rectangles forming the first areas of the individual binary patterns are set to be integral multiples of a predetermined unit size L provided in advance within a range where drawing by the drawing apparatus is possible as described in the entire document and as shown in the drawings.

Regarding claims 4 and 12, Dai Nippon teaches wherein the horizontal width sizes of the rectangles forming the unit areas are set so as to be n times as great as the unit size L (n is an integer), (n+l) types of binary patterns such as to have horizontal width sizes of the rectangles forming the first areas 0 times, 1 time, 2 times, ... n times as great as the unit size are prepared, and the binary patterns are allocated to interference wave intensities sectioned in (n+l) levels in a corresponding manner, respectively, and where a minimum drawing size determined based on drawing resolution of the drawing apparatus is provided as h, a horizontal pitch of the calculation points is set so as to be equal to or less than the minimum wavelength of a visible light and equal to or more than h x n as described in the entire document and as shown in the drawings.

Regarding claims 5 and 13, Dai Nippon teaches wherein rectangles each having a vertical width equal to a vertical pitch of the calculation points and a horizontal width equal to a horizontal pitch of the calculation points are used as the unit areas, reference points common to all the unit areas are provided, the individual binary patterns are allocated so that the respective reference points are arranged on the respective calculation points so that the binary patterns are allocated across an entire surface of the recording surface, and the vertical pitch and the horizontal pitch of the calculation points are both set so as to be equal to or less than the minimum wavelength of a visible light as described in the entire document and as shown in the drawings.

Regarding claims 7 and 15, Dai Nippon teaches a program to make a computer execute processes until a creating step of a binary image in the method for creating a

computer hologram according to claim 1, or a computer-readable recording medium containing said program as described in the entire document and as shown in the drawings.

Regarding claims 8 and 16, Dai Nippon teaches a computer hologram medium on which a computer hologram created by the method according to claim 1 is recorded as described in the entire document and as shown in the drawings.

In regard to claim 17, Dai Nippon teaches (see Figures 1-14) a computer hologram medium on which an original image is recorded as interference fringes that form a convex and concave structure, wherein a large number of unit areas are defined on the medium, the respective unit areas on the medium are each divided into a first area and a second area, the first area and the second area have a relationship that one forms a convex portion, and the other, a concave portion, interference wave intensity at a position of each unit area is expressed by an occupancy ratio of the first area relative to the unit area, and the respective unit areas are arrayed at a pitch as described in the entire document and as shown in the drawings.

However, in regard to claim 17, Dai Nippon does not teach that the respective unit areas are arrayed at a pitch of equal to or less than 400nm.

In regard to claim 17, Nippon Telegraph and Telephone teaches that the respective unit areas are arrayed at a pitch of equal to or less than 400nm as described in the entire document and as shown in the drawings.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the sample pitch less than the wavelength of the

reproduction light in order as taught by Nippon Telegraph and Telephone to prevent an occurrence of unnecessary reproduction light in the method of Dai Nippon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALESSANDRO AMARI whose telephone number is (571)272-2306. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ava
02 September 2008

/Alessandro Amari/
Primary Examiner, Art Unit 2872